Techniques of Water-Resources Investigations

Book 9 Handbooks for Water-Resources Investigations

National Field Manual for the Collection of Water-Quality Data



Chapter A7. BIOLOGICAL INDICATORS

Revised 2003

Edited by D.N. Myers and F.D. Wilde



U.S. DEPARTMENT OF THE INTERIOR GALE A. NORTON, Secretary

U.S. GEOLOGICAL SURVEY

Charles G. Groat, Director

Any use of trade, product, or firm names is for descriptive purposes only and does not imply endorsement by the U.S. Government.

For additional information write to:

Chief, Office of Water Quality U.S. Geological Survey 12201 Sunrise Valley Drive

Mail Stop 412

Reston, VA 20192

Copies of this report can be purchased from: U.S. Geological Survey

Information Services Box 25286, Federal Center

Denver, CO 80225

This report is accessible online at: http://pubs.water.usgs.gov/twriA9/

Foreword

The mission of the Water Resources Discipline of the U.S. Geological Survey (USGS) is to provide the information and understanding needed for wise management of the Nation's water resources. Inherent in this mission is the responsibility to collect data that accurately describe the physical, chemical, and biological attributes of water systems. These data are used for environmental and resource assessments by the USGS, other government and scientific agencies, and the general public. Reliable and objective data are essential to the credibility and impartiality of the water-resources appraisals carried out by the USGS.

The development and use of a *National Field Manual* is necessary to achieve consistency in the scientific methods and procedures used, to document those methods and procedures, and to maintain technical expertise. USGS field personnel use this manual to ensure that data collected are of the quality required to fulfill our mission.

(signed)

Robert M. Hirsch Associate Director for Water

Techniques of Water-Resources Investigations

Book 9 Handbooks for Water-Resources Investigations

Chapters of Section A, National Field Manual for the Collection of Water-Quality Data

- A1. Preparations for Water Sampling
- A2. Selection of Equipment for Water Sampling
- A3. Cleaning of Equipment for Water Sampling
- A4. Collection of Water Samples
- **A5. Processing of Water Samples**
- A6. Field Measurements
 - 6.0 General Information and Guidelines
 - 6.1 Temperature
 - 6.2 Dissolved Oxygen
 - **6.3 Specific Electrical Conductance**
 - 6.4 pH
 - **6.5** Reduction-Oxidation Potential (Electrode Method)
 - 6.6 Alkalinity and Acid Neutralizing Capacity
 - 6.7 Turbidity

A7. Biological Indicators

- 7.0 Five-Day Biochemical Oxygen Demand
- 7.1 Fecal Indicator Bacteria
- 7.2 Fecal Indicator Viruses
- 7.3 Protozoan Pathogens
- A8. Bottom-Material Samples
- A9. Safety in Field Activities